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ABSTRACT

Describing case studies of good practice concerning training on a range of new industrial equipment, this document reports on the effectiveness of the British plan for the Department of Trade and Industry to pay for one-third of the cost of equipment and local education authorities (LEAs) and the companies whose employees require training to share the rest of the cost. The report makes the following conclusions: (1) colleges, in cooperation with local industry and central government, can respond to the identified training needs of industry, but pump-priming funding beyond the basic education budget was essential to meet the high costs of the new equipment; (2) there must be coordinated LEA/college development policy linked to evolving local needs and a clear strategy for identifying training needs; (3) appropriate staff development is vital; (4) there should be a move toward financing procedures that adequately take into account maintenance and replacement costs; and (5) colleges should receive further assistance with determining the training needs of industry. (CML)

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COLLEGES

Extending links in new technology training

INDUSTRY

An example based on the evaluation of the DTI Pilot Scheme for IT Skills Updating in FE Colleges

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The 1980s have witnessed an ever-increasing number of employers introducing new technology into the workplace in response to the need to maintain their position in a competetive marketplace. This resulted in the need to ensure that employees are well versed in the full exploitation of the equipment provided. Traditionally such skills training in industry and commerce has been provided by FE colleges, but the all-too-frequent shortage of suitable equipment has made the FE system unable to provide the new technology training to the levels required.

To combat this situation the Department of Trade and Industry (DTI) has been providing funds to assist in the purchase of modern equipment to enable colleges to meet the training needs of local and national industry. As a result of these schemes, equipment worth some £25 million was purchased.

This report relates to the first group of colleges that were grant aided under the *Scheme for IT Skills Updating in FE Colleges*. Under this scheme DTI provided one-third of the cost of IT equipment and software, another third being raised from LEA or college funds, and companies requiring training providing the remainder. FEU was invited to undertake an evaluation of the effectiveness of this scheme; this report is a summary of the findings.

The project demonstrated that, in co-operation with local industry and central government, colleges can respond to the identified training needs in industry, but pump-priming funding above the basic education budget was essential to meet the high initial cost of equipment. The report describes a number of case studies of good practice, for a range of equipment.

The evaluation concluded that there must be co-ordinated LEA/college development policy linked to evolving local needs and a clear strategy for identifying training needs, that appropriate staff development is vital, and that there should be a move towards financing procedures that adequately take into account maintenance and replacement costs.

The determination of industrial training needs was seen to be an area where colleges should receive further assistance. The report of an FEU project aimed at providing appropriate guidance has been published as *Industry Needs — You!* (FEU, 1989).

Albert Clyde
Development Officer
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1. FEU EVALUATION

This report presents an outline of the FEU evaluation of the Department of Trade and Industry (DTI) project 'Pilot Scheme for IT Skills Updating in FE Colleges'. The outcomes have important implications which are relevant to all colleges as they develop strategies to meet the needs of industry in this age of rapidly changing technology. They are an indicator, though in a particular aspect of college work, of the problems that can emerge in meeting industrial needs for training/retraining.

PROJECT AIMS

The DTI project aims were:

- to encourage closer education/industry links and, specifically, to enable the real new technology skills training needs in participating industry to be both defined and met;
- to assist in targeting and provision of local resources to meet the defined needs, including mutually beneficial college/industry liaison to evolve and deliver the training;
- to improve local and national economic viability.

DTI invited bids from colleges to participate in the scheme, the overriding proviso being that DTI would meet one-third of the total cost if the LEA would meet a third and industry the other third. The bid had to indicate that the proposal would meet an industrial need.

FEU EVALUATION

The FEU evaluation of the DTI initiative was carried out in a number of stages, each aiming to refine the information gathered at the previous one.

Stage 1: The gathering of predominantly straightforward factual data, by means of a questionnaire, from all the colleges involved in the initiative.

Stage 2: Following from the questionnaire outcomes, a more detailed probe into the reasons behind, and views on, the data gathered by means of structured interviews in a large sample of colleges.

Stage 3: A dissemination and testing of the outcomes deduced from stages 1 and 2, by means of a seminar to which all the colleges were invited to send participants.

Stage 4: A probing of issues arising from the previous stages, and solutions to them by means of visits to a number of colleges which, on the basis of the evidence from the previous stages, had relevant information with respect to one or more issues.

Table 1: The sample in March 1987

Number of colleges participating in DTI project	42
Number of colleges circulated with questionnaire	42
Number of colleges completing questionnaire (This percentage would have been higher, but some colleges had barely started the project)	31 (74%)
Number of colleges where stage 2 interviews took place	30 (71%)
Number of colleges particpating in seminar	25
Number of colleges visited in stage 4	14 (33%)

STAGE 1

The questionnaires used in stage 1 were designed to obtain predominantly factual data concerning the college projects, the involvement of industry and the source and use of funds in the project. The questionnaires were circulated in May 1987. Some colleges had only just received the DTI funds although the project had been in operation for more than a year in others.

STAGE 2

The structured interviews of stage 2 involved FEU researchers visiting the colleges in May/June 1987 and interviewing the college staff leading the projects. The interviews took the same format as the questionnaires but probed more deeply and asked for opinions. Chapter 2 of the report gives the largely factual outcomes arising from stages 1 and 2.

STAGE 3

An interim report was compiled from the outcomes of stages 1 and 2. This, and the issues emerging from it, were used as the basis of a seminar held in October 1987 to which all the colleges were invited to send one or two participants.

STAGE 4

Further visits to colleges took place in November/December 1987, to clarify points relevant to the emerging issues and explore in more detail how colleges had met the challenges of the issues. Chapter 3 reports on the issues and solutions, refined as a result of stages 2 and 3.

ACHIEVEMENTS

The following represent the very positive achievements that can be ascribed to the DTI initiative:

- Closer college-industry links have occured. This has been a two-way process, with companies more involved in determining the 'products' of colleges and colleges more actively finding out what 'products' the companies want.

- The DTI initiative helps colleges meet the needs of employers to update employees' skills in new technology and improve their courses for *ab initio* technician training. Without the initiative, many of the colleges may not have had sufficient credibility with local companies to be 'allowed' to undertake aspects of their IT/NT training and updating.
- The definition of specifications for training is now being undertaken by some colleges in partnership with companies, though this is an aspect which has probably not evolved sufficiently in other colleges.
- The DTI initiative has resulted in employees in many companies receiving training in new technology skills. Without the initiative this would not have occurred to the same extent.
- Industry regards colleges as having more credibility with regard to new technology training, though there are still doubts regarding the flexibility with which some colleges are prepared to offer training.
- Many colleges are evolving procedures for becoming more responsive to the needs of industry, whether this means tailor-made programmes of training or flexibility in application of existing provision. The DTI initiative can claim a degree of credit for this in that the format of the scheme has pushed colleges into closer contact with industry.
- On an average, colleges took about seven months from the start of a project to deliver new or amended courses/ programmes for employers. The projected average time for college submissions to the DTI is five months. Because some of the colleges had received their DTI funds more than a year ago while others had only just received them when the evaluation started, there was inevitably variability in the progress made in meeting training needs of companies; many have already made substantial and continuing contributions in this area.
- Not all the colleges had evolved policies with regard to their approach to the emerging and developing new technology needs of companies; much of their work had been almost *ad hoc* in responding to immediate perceived needs.
- All the colleges felt that the DTI initiative enabled them to meet the needs of local employers for new technology training more effectively. In addition, many felt able to meet employers' needs beyond the local area, nationally or even internationally in some cases.

OUTCOMES OF GENERAL RELEVANCE TO COLLEGES

The following are some issues relevant to all colleges seeking to develop strategies to meet the needs of industry in this age of rapidly changing technology (the issues and examples of solutions are discussed in more detail in chapter 3):

- New technology initiatives stand the best chance of becoming consolidated within a college and local community if they are part of a college/LEA/ locality development policy.

- **Effective marketing is more than just publicity; it requires a total college strategy and the establishment of effective communication between college and customers.**
- Close collaboration with industry is needed to establish a college strategy based on current and emerging needs.
- To meet the needs of industry, colleges must respond with flexibility of course/programme content and delivery.
- Staff development is vital if colleges are to meet the training needs of industry. This involves staff gaining 'industrial know-how'.
- Advice from other colleges and industry may well be needed when ordering new technology equipment.
- A move towards self-financing of training programmes can mean a reconsideration of the college/LEA financing policy.

RELEVANT POLICIES

Many colleges have no organised policy regarding the introduction of IT or new technology. Often such introductions appear to occur on the basis of heads of department, small groups or even individual lecturers taking initiatives. The advent of the DTI project in a college is more often 'opportunistic' than part of an overall plan. However, there are exceptions to this. For example, Salford College of Technology has a detailed plan for the introduction of new technology which links with the Salford City Council plan to attract more industry to the city. The college is perceived by the city council as a major resource in helping to achieve this.

Most colleges either have or are moving towards developing a college marketing policy. This often involves either an individual — often a vice-principal — or a special unit within a college assuming overall responsibility for marketing the college. In most instances the marketing appears to just involve publicising the college and its courses, but a few cases involve an active programme of market research and development. Wakefield District College has formed a unit, Wakefield District College Services, to promote the entire range of services and facilities provided by the college.

Virtually all the colleges have clear-cut arrangements with their LEAs regarding income received from short courses and services to industry. These arrangements are, however, variable. In some cases the college retains all the income, in others a percentage (often about 70%), and in some whatever profit margin has been put on the services, the remainder going to the LEA.

COLLEGE PROJECTS

DTI-funded projects have, in about 70% of the colleges, extended provision into new areas. About 60% of the colleges considered it improved existing provision, and some saw it doing both. In most cases provision is in Computer Aided Design (CAD) and Computer Aided Management (CAM), though applications are quite varied. Thus, for example, the Walsall College of Technology project is concerned with the use of laser technology in production, while one of the Salford College of Technology projects concerns new technology in a production plant bakery.

Most projects evolved from college staff's perceptions of 'what is required' and discussions with companies, rather than from a training needs analysis or special market survey. Where the latter have taken place, it has often been a result of some other project, generally a local collaborative project as in the case of Reading College of Technology. Leeds College of Building identified the need for their project, 'IT in the Construction Industry', from a national survey conducted in collaboration with the Building Employers Confederation and funded by FEU. Swindon College commissioned a local market research consultant to carry out a market survey and training needs analysis. The need was almost

invariably seen in terms of the needs of companies, an exception being the project at South Glamorgan Institute of Higher Education where the demand came from self-employed draughtsmen who recognised the death of the drawing board and their current source of income and the need to acquire CAD skills.

Table 2: Methods used to determine needs for the projects
(total number of colleges = 30)

A general perception of changes in technology	84% of colleges
General discussions with some local companies	72%
Results of training needs analysis by college staff	44%
Requests from companies	36%
Special market survey among local companies	28%
Pressure from college advisory committee	16%
Results of training needs analysis by companies	8%

(The totals amount to more than 100% because colleges generally used more than one method.)

The equipment in many colleges was out of date and lacked credibility with local industry. The injection of DTI funds had enabled colleges to acquire modern equipment which, in many instances, brought them ahead of local companies in the use of new technology. This generated enthusiasm and motivation in college staff and led to a greater involvement with local industry.

The main products of the DTI initiative were new short courses, a service to industry aiding new technology development and improvements in existing day-release and full-time courses. The services to industry include advice on the possibilities of new technology, the range of hardware and software available, training needs and training programmes.

A development occurring in some colleges, e.g. Willesden College of Technology, is the establishment of user clubs. These enhance the dialogue between colleges and companies and aid new technology developments.

The starting dates of the projects in the 42 colleges in the DTI initiative, as of 31 March 1987, varied from late 1985 to April 1987. Thus, some of the projects had been in operation for more than a year. In a few instances the college had come back to the DTI for further funds while others had barely started. The purchase of hardware takes 1-12 months to complete, the average time being about 4½ months. The average time for development

work to start was just under two months, the actual times varying between zero — when development work started with the start of the project — to six months. The delay, in some cases, was due to LEA/college administrative procedures and in others to the waiting period for equipment to be installed. The first new or amended courses occurred, on average, about seven months after the approved start date of a project, the actual varying between zero — when courses were delivered coincidentally with the start of the project — to 15 months One issue affecting the time was whether the equipment purchased was just enhancing existing college equipment or breaking new ground for college provision.

Table 3: Products of the DTI initiative (total number of colleges = 30)

New short courses	92% of colleges
Service to industry aiding new technology developments	84%
Improvements in existing day-release courses	80%
Improvements in existing full-time courses	80%
Improvements in existing short courses	64%
New day-release courses	44%
Service to industry identifying skill requirements	40%
Learning packages	36%
Delivery of programmes in industry	36%
New full-time courses	24%

(The totals amount to more than 100% because colleges generally had more than one product.)

Staff development in many colleges was continuous, with the DTI project becoming just one strand in the development process. In many instances the advent of new equipment involved staff going on courses held by manufacturers. In some cases staff have been seconded into industry, for example at Stevenage College where a member of staff was seconded to a local company for six weeks. Some colleges have sent staff on courses at universities, polytechnics or other colleges, for example at de Havilland College where a staff member attended a polytechnic full time for three months while others attended on a part-time basis. Many of the colleges gave staff some time allocation for development work and implementation in connection with the project.

INDUSTRIAL INVOLVEMENT

Industries were involved with projects at all the colleges. Most of the involvement was with a few large companies and/or a few medium-sized ones (see Table 4). A large company is one that

has more than 200 employees in the local company or branch, a medium-sized one 50-200, and a small company less than 50.

Table 4: Industrial involvement with college projects (total number of colleges = 30)

Involvement with large companies:	
A few	80% of colleges
None	4%
Many	0%
One	16%
Involvement wth medium-sized companies:	
A few	60% of colleges
None	28%
Many	8%
One	4%
Involvement with small companies:	
A few	43%
None	27%
Many	23%
One	7%

The main activities of the companies are general engineering, electronics or supplying Computer Numeric Control (CNC), CAD, CAM.

Table 5: Main activities of industry (total number of colleges = 30)

General engineering	with 60% of the colleges
Electronics	48%
CNC/CAD/CAM supplier	40%
Construction industry	28%
Electrical engineering	20%
Computing, software or hardware	20%
Business/commercial	12%
Motor vehicle repair	8%

In addition, individual colleges were involved with the RAF and the Baking and Confectionery industry. (The total amounts to more than 100% because often the local industry covered more than one activity.)

While most colleges have initiated their projects with the collaboration of a few large or medium-sized companies, all envisage the outcomes of the project being relevant to many more. One college which has involved many companies from the outset is Llandrillo Technical College. The project is for the motor vehicle repair and servicing trade, and some 50 garages are becoming involved.

Company involvement was often through discussions with a college about its needs, sometimes in the forum of a college advisory committee. Discussions were also about what courses or service they would support. Development of courses was, in the main, carried out by colleges with, in some instances, data and advice from companies. Advice was frequently sought from equipment suppliers.

At Swindon College, the initial design of the project evolved from an industrial seminar. This generated a group of interested companies which explored the paths open to the college and determined the structure and equipment base for the project. They also assisted with money and equipment. The college anticipates using staff from local industry for certain specialist courses.

Walsall College of Technology has a special arrangement with a company — Laser 2000 — by which, for part of the time (2/5 for 5 years), the company is able to use the laser acquired in the DTI project for routine production. For the remainder of the time the college can use it for training programmes for other companies. The company has assisted the college with course development and staff training. Maintenance of the facility is provided by the company over the five years.

Most colleges actively promote the courses and services they can offer as a result of the DTI initiative. Leaflets, local radio, TV, participation in exhibitions, articles in newspapers and trade journals, advertisements, user clubs, etc. are all means employed by colleges. It is too early for many colleges to say what the demand will be for their courses and services since they are just starting to offer 'products'. Demand for services is seen by most colleges as being local, though some consider it to be national and a few feel there could be an international demand.

FUNDING

The DTI funds received by colleges in this initiative averaged about £28,000, ranging from £3,000 to £50,000. They were given on the basis of the college being able to obtain a third of the resources required from industry and LEAs. Many colleges in the sample came from the first group to receive DTI support, and much of the industrial input was in the form of suppliers' discounts. From 1 April 1986, DTI has insisted on at least half the industrial input being from users of the envisaged training, and this was evident in later groups of colleges. Llandrillo Technical College has received funds from a large number of small companies, in exchange for a future discount on courses and services. The LEA/college input was often made from existing funding provision. In some instances, however, special/additional funding was made available. In one case — Wakefield District College — the LEA provided funds as a loan which has since been refunded out of revenue from courses.

The DTI funds were predominantly used to purchase hardware, with such items as staff development time, modifications of rooms in colleges, marketing and staff time for development being provided as a resource by the LEA.

Table 6: Average allocation of DTI funds

Purchase of hardware	80%
Purchase of software	15%
Staff development	3%
Marketing	1%
Other	1%

A problem experienced by many of the colleges was with technical help. There were instances of immobility of technicians within colleges. Though teaching staff were often given remission to prepare courses, only occasionally was provision made for adequate technical assistance. Trained technicians cannot always be retained by colleges as they are often recruited by industry.

Maintenance costs of expensive equipment is a problem for many colleges. Some, however, have overcome this by generating income from courses. The LEA makes special provision in a few cases.

Most colleges propose to charge industry for courses and special services, on a full-cost basis. However, the arrangements with the LEA for a college using income from such services (see Chapter 2) could result in the college receiving insufficient income to cover maintenance costs and future upgrading and expansion.

LINKS WITH OTHER PROJECTS

In 48% of the colleges the DTI project was following on from or linked in some way with another project. These were mainly local collaborative projects, though a few followed on from PICKUP and FEU projects. Of those participating in the DTI initiative, 56% had been involved in the earlier DTI CNC project.

SUMMARY

While most colleges participating in the DTI initiative were evolving marketing policies, many had no organised policy for the introduction of IT or new technology into the college. Virtually all had clear-cut arrangements with their LEAs regarding income from courses or services for industry, though the arrangements for the income to be retained by the college were variable.

In most cases the DTI initiative has resulted in an extension or improvement of college provision in CAD/CAM, though the applications of this are quite varied. In most cases the projects have evolved from college staff's perceptions of what is required rather than market research or skills analysis. The projects have enhanced the credibility of the colleges with local industry. The main outcomes are seen as new short courses, a service to industry aiding new technology developments, and improvements in existing day-release and full-time courses. In addition, there has been an improvement in college staff morale with the introduction of new equipment, since they now feel able to match industry's expectations.

The starting dates for the projects varied from autumn 1985 to spring 1987. The average time for hardware to be purchased and installed was about four and a half months, with new or amended courses taking, on average, about seven and a half months after the start. Staff development was in most instances a continuing process.

In most cases, industrial involvement was from a few large or medium-sized companies, predominantly in general engineering. The nature of the involvement varied, but was mainly in the identification of industrial need and support for the courses.

DTI funds received by a college was £28,000 on average. The industrial contribution to the project was in the form of discounts on equipment purchased and as funds and equipment specifically contributed for the project. LEA funds sometimes came out of existing funding provision; in some instances special funds were given. In about half the colleges the DTI projects followed on from, or were linked with, some other project.

The questionnaire and visits to colleges reported in chapter 1 revealed a number of issues affecting the ability of colleges to meet industrial needs. While some colleges had identified and overcome such issues and were meeting industrial needs effectively, others were not clear either about the issues or how to overcome them.

LEA/COLLEGE POLICIES

While some colleges have developed policies regarding the introduction of new technology and other curricular changes, many have not done so and few LEAs have such a policy for their colleges. The introduction of IT or new technology within a college was therefore often on the basis of heads of departments, small groups of lecturers or even individuals taking initiatives. Such initiatives often appeared to hinge on the enthusiasm of an individual whose departure from the college could have serious repercussions on the development and continuation of the project.

The lack of a policy often appeared to indicate a lack of pre-project planning. This can result in staff — both teaching and support — not being prepared in attitude and the necessary skills to enable the project to make a speedy start. Planning is also needed if staff — teaching and technician — are to devote time to a project. As some colleges have already perceived, staff development needs to be a continuous process. A lack of pre-project planning can also mean that the college is unaware of local industrial needs; the project can become just a guess as to what industry needs. Ascertaining industrial needs should be a continuous process and part of college policy.

Planning is also needed to ensure that a project is not seen as just a one-off *ad hoc* venture but as part of a developing facility to meet industrial needs. Development and updating need, thus, to be planned for. This might well require consideration of the way income from courses and services, as well as their organisation, is handled.

DEVELOPMENT

Salford College of Technology is an example of a college involved with the DTI initiative working closely with the city council to identify a policy for education and training in the regeneration of the inner city. There is considerable development of new and existing housing stock and factory provision within the city. The college and city council see the whole area of new technology as a vital part of the regeneration process.

One development being planned is a new technology centre in a nearby business park where purpose-built accommodation would bring industry and college staff together in an environment conducive to the development and application of new technology. Conference and teaching facilities would be available on site. An essential aspect of any company decision about moving into new technology is the need to be taken further than a feasibility study and into the provision of pilot production facilities. It is proposed that the new technology centre should

offer such facilities to industry. Salford City policy is an attempt to consider the total infrastructure necessary to attract companies and so give a boost to the local, and ultimately national, economy.

Swindon College has set up a college committee structure to develop policies aimed at making the college more responsive to the needs of local industry. A committee of industrialists has been set up, being a sub-committee of the industrial governors of the governing body. This committee picks up specific problems and areas for action and development, and forms discussion groups to suggest what should be done. General departmental advisory committees have been disbanded and replaced by industry-centred working groups convened to address specific issues.

A number of DTI projects were through LEAs rather than direct to colleges. Sometimes this just meant that the activity was promoted by the LEA, mainly through the initiative of its officers rather than as the result of an authority policy for new technology. Cheshire LEA has, however, a committee/working party structure aimed at developing LEA policy. Support is provided by commissioned studies on particular aspects of further education. Two years ago there was a study of engineering within FE which determined the direction of, and college bases for, the current DTI initiatives. As another illustration of the development of LEA policy, it was noted that nowhere in the LEA's colleges were there advanced courses in IT. Studies were undertaken in respect of industrial need and decisions made on the nature and location of a course. In addition, due consideration was given to the staff development implications. A consequence of such LEA policy development is that resources are directed to particular institutions for particular purposes rather than spread equally across all the colleges.

New technology initiatives stand the best chance of becoming consolidated within a college and local community if they are part of a college/LEA/locality development policy.

MARKETING

While most colleges are moving towards developing a marketing policy, this was sometimes seen purely in terms of publicity for what the college is offering. The approach of market research was less frequent. Such activities take time and require a flexible use of staff; staff resource, however, was often inflexibly used.

APPROACHES

Wakefield District College has established (March 1986) a unit within the college, Wakefield District College Training Services, with the specific job of informing industry of the wide-ranging training resources — human and technical — the college can provide. The unit is the first point of contact for companies wanting to explore the possibilities of training. The unit will help managers identify training needs and design training courses which can be delivered in the company, the college, residentially or by open learning.

The more common approach to marketing is that of Richmond upon Thames College which has an overall college marketing

committee supported by departmental marketing committees. Questionnaires, surveys, personal contacts, responses to press releases, etc. are used to identify potential customers. One of the main aims of marketing perceived by the college is to gain credibility with the customer. Thus, in the case of technology, the Dean of Technology acts as the front of the operation to work with the customer. An industrialist has been seconded to work at the college.

A number of colleges are working with companies to develop and market training. The companies use their own marketing and distribution systems to market college services. An example of this is Southampton Institute of Higher Education which is involved with six companies in this way.

Effective marketing is more than just publicity. It require a total college strategy and the establishment of effective communication between college and customers.

INDUSTRIAL NEEDS

For many colleges, the projects following from the DTI initiative did not evolve from a market survey or a training needs analysis but were perceptions by college staff of what is required, often following general discussions with a few companies. While college staff may have 'keen antennae' and be able to say what companies require, this does not always appear to be the view of industrialists. Some industrialists, however, do not seem to have identified their own training needs.

To gain some impression of the industrialists' view of their training needs in relation to what colleges can provide, a number of personnel managers of companies in the catchment areas of colleges involved in the DTI projects were interviewed.

- Training needs were often identified as a result of an annual appraisal based on a consideration of the needs of individuals and groups and a longer-term view of the direction of company development.
- Companies tended to look for their training in a number of places. Where the training required was for operatives in a very specialised field, the company would probably have to undertake such training itself. Many companies found the colleges flexible and able to meet their training needs, though this was more likely to be the case in management training than engineering.
- Factors affecting the choice of training agency were cost, relationship of the agency with the company, and knowledge of company needs, location, flexibility and quality.
- One college was considered, by companies in the area, to have a 'traditional' image with a poor public face. A particular problem mentioned was getting through the switchboard to someone who could help; the response time was considered too long. The 'up front' organisation of some colleges needs to be improved. Companies felt they got value for money from another college. Some difficulties were being experienced with lack of flexibility, but the situation was seen as improving.

- Companies often wanted, before any consideration of training, to establish whether new technology was appropriate and cost effective. This requirement was being met, in some colleges, by the installation of DTI-funded equipment.

APPROACHES

Many colleges obtained information on industrial needs from work carried out as part of a local collaborative project. Thus, for example, Richmond upon Thames College has an LCP for the determination of training required to facilitate the use of IT equipment in the oil/gas and process plant industry. This not only gave a training needs analysis but also enabled staff to gain valuable experience of the industry and forge links with companies.

A number of colleges have set up development teams involving companies to ascertain needs and develop training. For example, Stevenage College has a development team involving two large companies, a training board and a specialist from a polytechnic.

Some colleges have set up partnership arrangements with local companies. One example of this is Turnkey, a consortium between Walsall College and West Midlands industry with the chamber of commerce. The partnership has permitted discussion between the college and industry so that the college can provide the training that the companies want. In conjunction with one company, the college has acquired an industrial laser machine. The arrangement is that the college obtains the laser by a leasing arrangement, with the company paying a rent to the college for its use over the five-year leasing period. In return, the company is allowed access to the machine, outside class hours, for its research and development work. The company has also provided training for two college operatives, and maintenance.

Wakefield District College is forming partnerships with a number of organisations: Yorkshire Enterprise Ltd, a development and venture capital company; the Engineering Industry Training Board; and the Regional Technology Network which covers companies outside the remit of the other two organisations. Through these organisations, companies are approached and invited to participate with the college in establishing whether they have any requirements for CAE equipment and whether it would be cost-effective. From this can emerge an action plan for further evaluation work, actual investment, and a training needs analysis.

A number of colleges open up dialogues with companies through user clubs which establish whether new technology is appropriate for them and, if so, their training needs. Willesden College of Technology has a CAD Users Association. This started with five companies needing CAD training and wanting to try out equipment before purchase. Membership of the association costs £500 for a 12-month period. For this, companies have access to some free operator training and CAD equipment. Further training can be purchased. Cost incurred by companies may well be offset by local training grants made by the Training Agency (formerly the Manpower Services Commission) to help employers meet training needs in new technology. Ideally, such a

user group needs 20-30 companies to stand a chance of becoming self-funding. This is necessary for staff to be able to devote their full attention to the group, which is essential for its effective operation. A telephone line with answering machine is used for incoming calls.

Close collaboration with industry is needed to establish a college strategy based on current and emerging needs.

FLEXIBILITY

As has been indicated earlier (Industrial Needs), one of the needs of industry is for flexibility in colleges. This means training when and where the company requires, in a format and of a duration that the company can accept, and with a content that meets the company's needs. This often means training being tailor-made for a company. Some companies feel that colleges do not offer such flexibility. One company was dissatisfied with a college because it could not be persuaded to start a training course at 8.30am and sought to restrict the course to conventional term time. Meeting the needs of industry requires staff dedicated to being flexible.

APPROACHES

De Havilland College is working with the local authority and local companies to develop training courses, which integrate off-the-job initial skill training with on-the-job competence development, for clerical and administrative staff to develop IT/computing skills. The off-the-job initial training takes place in the college and the competence development at the workplace.

Mid Kent College of Further and Higher Education, Department of Advanced Technology, has set up an Open Access Centre which aims to provide a totally flexible education and training resource for local companies. The centre is open six days a week for 11 months of the year. It is suitable for individuals wishing to acquire new skills as part of their professional, business or industrial activities or for companies with training needs for their personnel. The skills, level, pace and time are determined by the individual or company. Training can take place at the centre or the company. In some cases training can lead to a BTEC qualification. The cost of providing such training through individualised learning packages is comparable with conventional classroom training. The centre generates income from full-cost courses and now has a large measure of financial self-sufficiency.

To meet the needs of industry, colleges must respond with a flexibility of course/programme content and delivery.

STAFF DEVELOPMENT

A problem faced by colleges in providing training in new technology is staff development to ensure not only the required skills but updating them as technology develops. To be credible with companies, college staff must be up-to-date with the subject and able to assess and evaluate possibilities for its adoption, development and application within the area of interest of a company. Staff development requires colleges to give staff time, which costs money. There is also the problem of providing cover for staff on courses or secondments.

Most colleges involved in the DTI initiative organised in-college staff-development activities. A third of the colleges also sent staff on manufacturers' training courses (though these were often not highly rated),a sixth seconded staff into companies for a period of time, and a smaller number used the facilities of other colleges. This report represents only a snapshot of staff development since it refers to just one project. However, it does raise the issue of whether college staff are gaining sufficient expertise in aspects other than 'academic knowledge'.

EXAMPLES

Following discussions with 70 local companies concerning their needs, Stevenage College identified four areas where it needed help to meet the training needs. These areas were funds for equipment and staff training, assistance in the writing of equipment specifications and choice of equipment and materials, assistance in the writing of course/training specifications, and staff training and development. Stevenage College obtained help from two large companies. Detailed specifications of staff requirements were worked out and programmes of staff development devised. These involved visits to other colleges and polytechnics, secondment of a staff member to a company for six weeks, and in-house training. A curriculum development team was set up with members from companies, a training board, a polytechnic and the college. The outcome has been a dramatic development of staff knowledge, confidence and skills. This has been recognised by local industry and, as a result, the college has become deeply involved in company training plans.

The City of Bath College of Further Education has involved companies in its staff development programme. One staff member has been on secondment to a company, one day per week, for a year. Another has had seven months' full-time secondment to a company. In addition to in-college staff development for other staff, there has been a staff-development programme for technicians.

At the Essex Institute of Higher Education, staff development for new technology has effectively meant that the equivalent of two staff members have been away from the college for two and a half years. Staff have been on secondment to research and development departments in companies, e.g. one full-time for a term, another two days per week for a term, etc. They have been concerned with updating in computer applications in technology, design for manufacture, the implications of robotics and further automation of processes, digital communications, electronic engine control systems, etc.

Staff development is vital if colleges are to meet the training needs of industry and involves staff gaining 'industrial know-how'.

EQUIPMENT

The identification of appropriate equipment and suppliers was highlighted, at a seminar organised by the DTI in October 1987, as a time-consuming operation. For most projects there was a wide choice of suppliers available. It was felt that help was often required in identifying the most appropriate equipment for the projects. Some experienced problems in matching software to

hardware. In some respects this reflected difficulties in the planning and needs analysis that went into the design of the project. Many felt they had been at the mercy of 'over ambitious' salesmen and needed help in negotiating the price of equipment and any licensing agreement. This was a new area that both college and LEA staff had had little experience of dealing with.

ADVICE

A number of tips were suggested by the seminar participants:

- include a fixed tender date in the contract, with possible penalty clauses;
- draw up a loose specification with global maximum/minimum costings and ask a number of suppliers to quote with appropriate equipment;
- always negotiate the price; there may be anything up to a 50% mark-up and educational discounts are quite normal;
- ask for free software, to be updated regularly;
- negotiate the matching of software and hardware and the necessary setting up as part of the initial contract;
- establish a relationship with the manufacturer.

Purchasing the right equipment in the first instance was vital and not to be rushed into. Industry often takes an equal length of time in the purchase of expensive hardware.

Some colleges have called on local industrialists to help them prepare equipment specifications and choose a manufacturer. Stevenage College (see Staff Development — Examples) felt the need for such help and obtained it from local companies. Some obtained help from the FEU Advisory Service for Computer Aided Engineering (run for FEU by Dr P Ingham at Birmingham Polytechnic, Department of Mechanical and Production Engineering).

Advice from other colleges and industry may well be needed when ordering new technology equipment.

FINANCE

The form of the DTI funding required colleges to obtain both LEA and industrial contributions. While both these presented some colleges with problems, the latter might well indicate lack of prior involvement with local industry in meeting their training needs. The 'one-off' nature of the DTI grant also presented colleges with the problem of ensuring a continuing supply of funds for existing equipment to be maintained and development to meet evolving needs. Colleges and LEAs had varying policies as to how much colleges could retain of the income from training programmes and services to industry. These should be reviewed if colleges are to move towards a self-financing situation. There is a need to generate income and hold it for future investment.

APPROACHES

Llandrillo Technical College obtained its industrial contribution from a large number of small companies, i.e. garages. In exchange for a contribution a company has an involvement in the project and obtains future discounts on courses and services.

Leasing has been used by a number of colleges, a particular example being Walsall College (see Industrial Needs — Approaches). The leasing arrangement for the equipment, in partnership with a local company so that both college and company have use of it, is particularly cost effective.

Some colleges have set up separate units for training and services to industry, e.g. Wakefield District College (see Marketing — Approaches) and Mid Kent College of Further and Higher Education (see Flexibility — Approaches). Such units can be considered independent financial cost centres and deal with income differently from other parts of the college. Such an arrangement may allow more easily for retention and redeployment of income.

A move towards self-financing of training programmes can mean a reconsideration of the college/LEA financing policy.

CENTRES OF EXCELLENCE

The issue as to whether there should be a network of centres of excellence throughout the country was discussed at the seminar. The idea that finance could be directed to create and maintain such centres had a mixed reception. Because of the complexities of the issues involved in such an idea, no consensus of views emerged as to either the function, form or desirability of a network. Although there is no national policy with regard to a network, it is likely that one may emerge by a process of 'natural selection'.

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Objectives

The objects for which the **Further Education Unit (FEU)** is established are to promote, encourage and develop the efficient provision of further education in the United Kingdom and for that purpose:

a) to review and evaluate the range of existing further education curricula and programmes and to identify overlap, duplication, deficiencies and inconsistencies therein;
b) to determine priorities for action to improve the provision of further education and to make recommendations as to how such improvement can be effected;
c) to carry out studies in further education and to support investigations of and experimentation in, and the development of, further education curricula and to contribute to and assist in the evaluation of initiatives in further education;
d) to disseminate and publish information, and to assist in the dissemination and publication of information, about recommendations for and experiments and developments in further education.

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